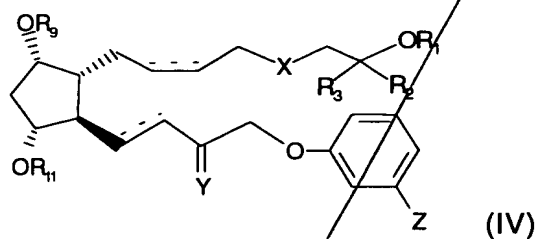


What is Claimed is:

1. A method of treating glaucoma and ocular hypertension which comprises topically administering to the affected eye a therapeutically effective amount of a compound of formula:



wherein:

R_1 = H; C_1 - C_{12} straight-chain or branched alkyl; C_1 - C_{12} straight-chain or branched acyl; C_3 - C_8 cycloalkyl; or a cationic salt moiety;

R_2 , R_3 = H, or C_1 - C_5 straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

X = O, S, or CH_2 ;

--- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

R_9 = H, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl;

R_{11} = H, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl;

Y = O; or H and OR_{15} in either configuration wherein R_{15} = H, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl; and

Z = Cl or CF_3 ;

with the proviso that when R_2 and R_3 taken together represent O, then $R_1 \neq C_1$ - C_{12} straight-chain or branched acyl; and when $R_2 = R_3 = H$, then $R_1 \neq$ a cationic salt moiety.

1 2. The method of claim 1, wherein: $R_2 = R_3 = H$, or R_2 and R_3 taken
2 together represent O; $X = O$ or CH_2 ; $R_9 = R_{11} = H$; $Y = H$ and OR_{15} ; and $R_{15} = H$.

1 3. The method of claim 2, wherein: $R_1 = H$ or C_1 - C_{12} straight chain or
2 branched alkyl; and R_2 and R_3 taken together represent O.

1 4. The method of claim 3, wherein the compound of formula (IV) is
2 selected from the group consisting of 3-oxacloprostenol, 13,14-dihydrofluprostenol,
3 and their pharmaceutically acceptable esters and salts.

1 5. The method of claim 2, wherein: $R_1 = H$ or C_1 - C_{12} straight chain or
2 branched acyl; and $R_2 = R_3 = H$.

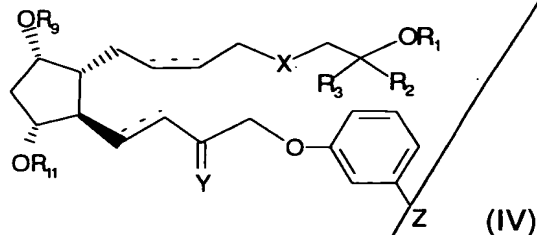
1 6. The method of claim 5, wherein the compound of formula (IV) is
2 selected from the group consisting of cloprostenol-1-ol and 13,14-
3 dihydrocloprostenol pivaloate.

1 7. The method of claim 1, wherein between about 0.01 and about 1000
2 μg /eye of the compound is administered.

1 8. The method of claim 7, wherein between about 0.1 and about 100
2 μg /eye of the compound is administered.

1 9. The method of claim 8, wherein between about 0.1 and about 10
2 μg /eye of the compound is administered.

10. A topical ophthalmic composition for the treatment of glaucoma and ocular hypertension comprising a therapeutically effective amount of a compound of formula:



wherein:

$R_1 = H$; C_1 - C_{12} straight-chain or branched alkyl; C_1 - C_{12} straight-chain or branched acyl; C_3 - C_8 cycloalkyl; or a cationic salt moiety;

$R_2, R_3 = H$, or C_1 - C_5 straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

$X = O, S$, or CH_2 ;

--- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

$R_9 = H$, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl;

$R_{11} = H$, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl;

$Y = O$; or H and OR_{15} in either configuration wherein $R_{15} = H$, C_1 - C_{10} straight-chain or branched alkyl, or C_1 - C_{10} straight-chain or branched acyl; and

$Z = Cl$ or CF_3 ;

with the proviso that when R_2 and R_3 taken together represent O, then $R_1 \neq C_1$ - C_{12} straight-chain or branched acyl; and when $R_2 = R_3 = H$, then $R_1 \neq$ a cationic salt moiety.

11. The composition of claim 10, wherein: $R_2 = R_3 = H$, or R_2 and R_3 taken together represent O; $X = O$ or CH_2 ; $R_9 = R_{11} = H$; $Y = H$ and OR_{15} ; and $R_{15} = H$.

1 12. The composition of claim 11, wherein: $R_1 = H$ or C_1-C_{12} straight chain
2 or branched alkyl; and R_2 and R_3 taken together represent O.

1 13. The composition of claim 12, wherein the compound of formula (IV) is
2 selected from the group consisting of 3-oxacloprostenol, 13,14-dihydrofluprostenol,
3 and their pharmaceutically acceptable esters and salts.

1 14. The composition of claim 11, wherein: $R_1 = H$ or C_1-C_{12} straight chain
2 or branched acyl; and $R_2 = R_3 = H$.

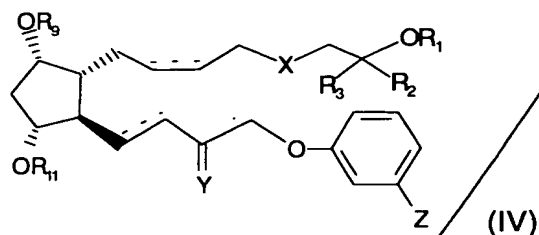
1 15. The composition of claim 14, wherein the compound of formula (IV) is
2 selected from the group consisting of cloprostenol-1-ol and 13,14-
3 dihydrocloprostenol pivaloate.

1 16. The composition of claim 10, wherein the concentration of the
2 compound of formula (IV) is between about 0.00003 and about 3 wt%.

1 17. The composition of claim 16, wherein the concentration of the
2 compound of formula (IV) is between about 0.0003 and about 0.3 wt%.

1 18. The composition of claim 17, wherein the concentration of the
2 compound of formula (IV) is between about 0.003 and about 0.03 wt%.

19. A compound of formula:



wherein:

$R_1 = \text{H}$; $\text{C}_1\text{-C}_{12}$ straight-chain or branched alkyl; $\text{C}_1\text{-C}_{12}$ straight-chain or branched acyl; $\text{C}_3\text{-C}_8$ cycloalkyl; or a cationic salt moiety;

$R_2, R_3 = \text{H}$, or $\text{C}_1\text{-C}_5$ straight-chain or branched alkyl; or R_2 and R_3 taken together may represent O;

$X = \text{O}$;

--- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

$R_9 = \text{H}$, $\text{C}_1\text{-C}_{10}$ straight-chain or branched alkyl, or $\text{C}_1\text{-C}_{10}$ straight-chain or branched acyl;

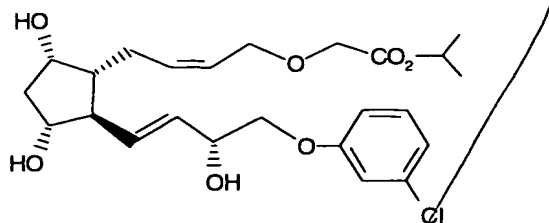
$R_{11} = \text{H}$, $\text{C}_1\text{-C}_{10}$ straight-chain or branched alkyl, or $\text{C}_1\text{-C}_{10}$ straight-chain or branched acyl;

$Y = \text{O}$; or H and OR_{15} in either configuration wherein $R_{15} = \text{H}$, $\text{C}_1\text{-C}_{10}$ straight-chain or branched alkyl, or $\text{C}_1\text{-C}_{10}$ straight-chain or branched acyl; and

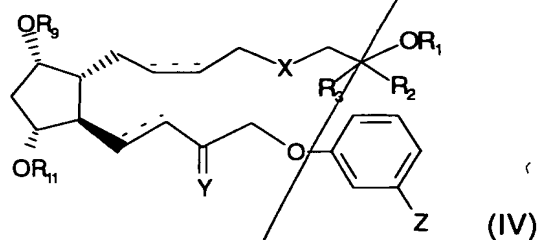
$Z = \text{Cl}$ or CF_3 ;

with the proviso that when R_2 and R_3 taken together represent O, then $R_1 \neq \text{C}_1\text{-C}_{12}$ straight-chain or branched acyl; and when $R_2 = R_3 = \text{H}$, then $R_1 \neq$ a cationic salt moiety.

20. The compound of claim 19, having the formula:



21. A compound of formula:



wherein:

$R_1 = C_1-C_{12}$ straight-chain or branched alkyl; C_1-C_{12} straight-chain or branched acyl; C_3-C_8 cycloalkyl;

$R_2 = R_3 = H$;

$X = CH_2$;

--- represents any combination of a single bond, or a *cis* or *trans* double bond for the alpha (upper) chain; and a single bond or *trans* double bond for the omega (lower) chain;

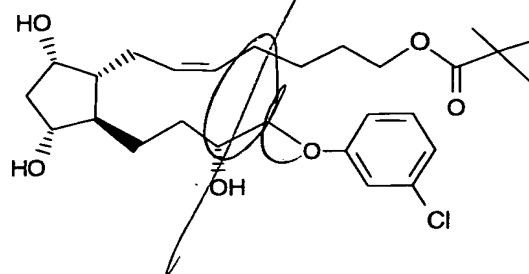
$R_9 = H$, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

$R_{11} = H$, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl;

$Y = O$; or H and OR_{15} in either configuration wherein $R_{15} = H$, C_1-C_{10} straight-chain or branched alkyl, or C_1-C_{10} straight-chain or branched acyl; and

$Z = Cl$ or CF_3 .

23. The compound of claim 21, having the formula:



add a²